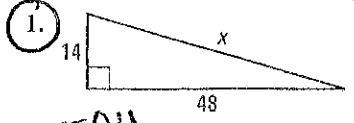
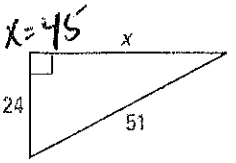
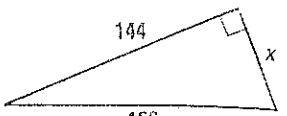
Chapter 7

7.1 Find the unknown side length of the right triangle using the Pythagorean Theorem or a Pythagorean triple.

1. 

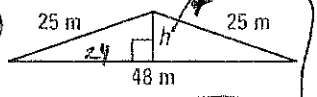
$x = 50u$

2. $x = 45$


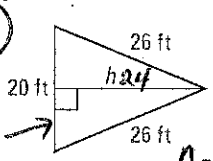
3. 

$x = 60u$

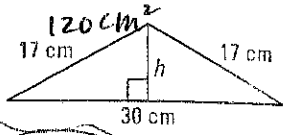
7.1 Find the area of the isosceles triangle.

4. 

$A = \frac{1}{2}(48)(7) = 168\,m^2$

5. 

$A = \frac{1}{2}(20)(24) = 240\,ft^2$

6. 

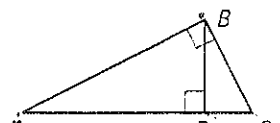
7.2 Tell whether the given side lengths of a triangle can represent a right triangle. $40^2 ? 24^2 + 32^2$ $27^2 ? 11^2 + 25^2$ no

7. 24, 32, and 40 yes
8. 21, 72, and 75 yes
9. 11, 25, and 27
10. 7, 11, and 13 no
11. 17, 19, and $5\sqrt{26}$ yes $(25 \cdot 26) ? 19^2 + 17^2$
12. 9, 10, and $\sqrt{181}$ yes

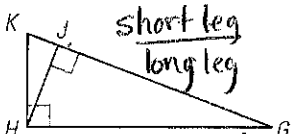
7.2 Decide if the segment lengths form a triangle. If so, would the triangle be *acute*, *right*, or *obtuse*? $625 ? 196 + 441$ $625 < 637$ acute

13. 14, 21, and 25 a △
14. 32, 60, and 68 △, right
15. 11, 19, and 32 not a △
16. 3, 9, and $3\sqrt{11}$ △, obtuse
17. 12, 15, and $3\sqrt{40}$ a △ $9.40 ? 144 + 225$ acute
18. $4\sqrt{21}$, 25, and 31 △, right

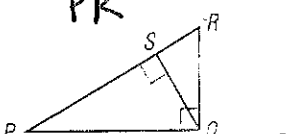
7.3 Write a similarity statement for the three similar triangles in the diagram. Then complete the proportion.

19. $\frac{AB}{AD} = \frac{BC}{?}$ BD
hypo / long leg


$\triangle ADB \sim \triangle BDC \sim \triangle ABC$

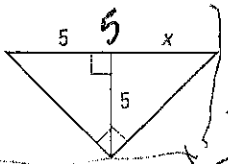
20. $\frac{KJ}{HJ} = \frac{?}{JG}$ HJ


$\triangle GHK \sim \triangle GJH \sim \triangle HJK$

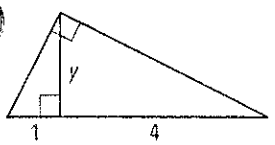
21. $\frac{SR}{RQ} = \frac{RQ}{?}$ PR
short leg / hypo


$\triangle PSQ \sim \triangle QSR \sim \triangle PQR$

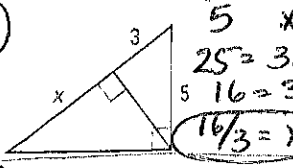
7.3 Find the value of the variable. Round decimal answers to the nearest tenth.

22. 

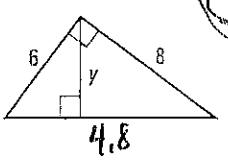
$5 = x$

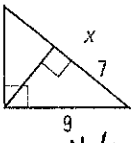
23. 

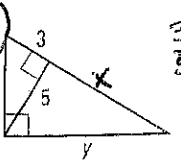
$\frac{y}{1} = \frac{4}{y}$
$y = 2$

24. 

$\frac{3}{5} = \frac{5}{x+3}$
$25 = 3x + 9$
$16 = 3x$
$\frac{16}{3} = x$

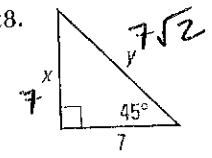
25. 

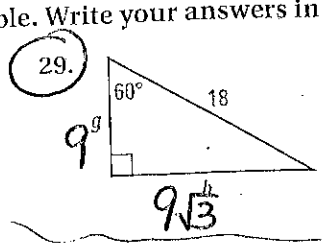
26. 

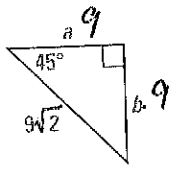
27. 

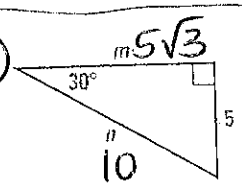
$\frac{3}{5} = \frac{5}{x}$
$\frac{25}{3} = \frac{3x}{3}$
$x = \frac{25}{3}$
$\frac{y}{3\frac{1}{3}} = \frac{25/3}{y}$
$y^2 = \frac{850}{9}$
$y = \frac{5\sqrt{34}}{3}$

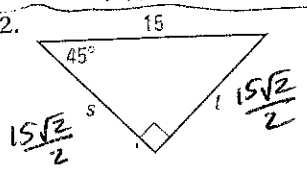
7.4 Find the value of each variable. Write your answers in simplest radical form.

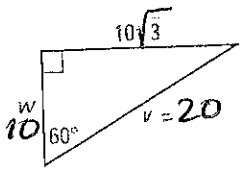
28. 

29. 

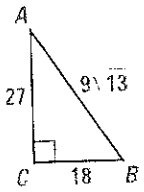
30. 

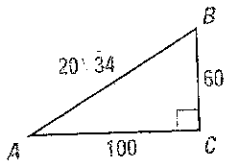
31. 

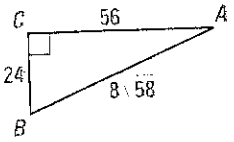
32. 

33. 

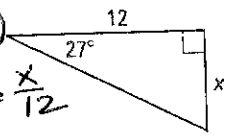
7.5 Find tan *A* and tan *B*. Write each answer as a fraction and as a decimal rounded to four places.

34. 

35. 

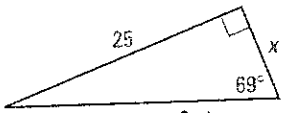
36. 

7.5 Use a tangent ratio to find the value of *x*. Round to the nearest tenth. Check your solution using the tangent of the other acute angle.

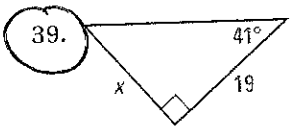
37. 

$\tan 27 = \frac{x}{12}$

$x = 6.1$

38. 

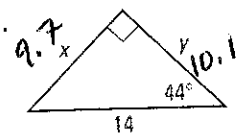
9.6

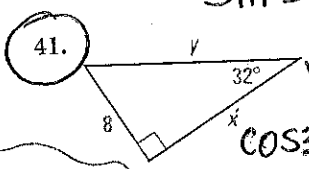
39. 

$\tan 41 = \frac{x}{19}$

$x = 16.5$

7.6 Use a sine or cosine ratio to find the value of each variable. Round decimals to the nearest tenth.

40. 

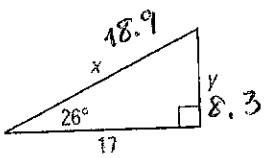
41. 

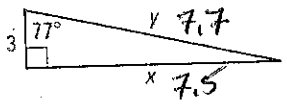
$\sin 32 = \frac{8}{y}$

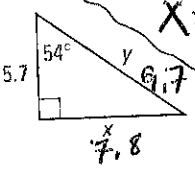
$y = 15.1$

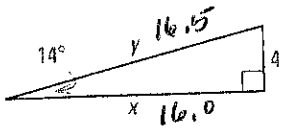
$\cos 32 = \frac{x}{15.1}$

$x = 12.8$

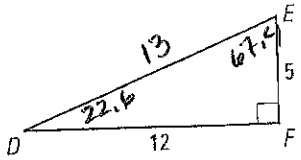
42. 

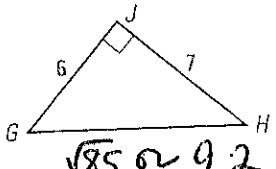
43. 

44. 

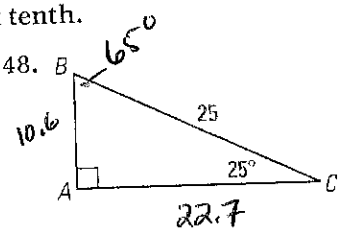
45. 

7.7 Solve the right triangle. Round decimal answers to the nearest tenth.

46. 

47. 

$\sqrt{85} \approx 9.2$

48. 

22.7

G: $\tan^{-1}\left(\frac{7}{6}\right) = 49.4$

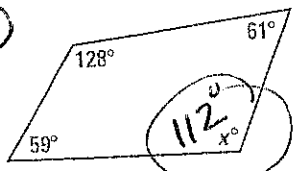
H: $\tan^{-1}\left(\frac{6}{7}\right) = 40.6°$

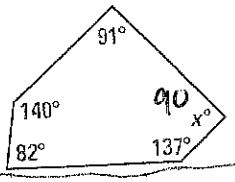
EXTRA PRACTICE

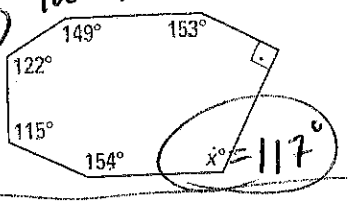
EXTRA PRACTICE

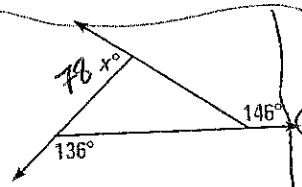
Chapter 8

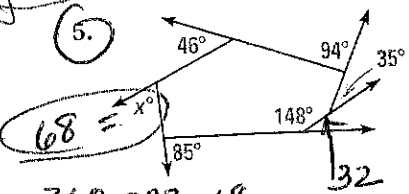
8.1 Find the value of x.

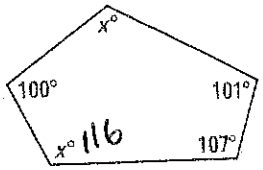
1. 

2. 

3. 

4. 

5. 

6. 

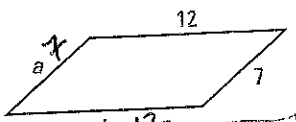
8.1 Find the measure of an interior angle and an exterior angle of the indicated regular polygon.

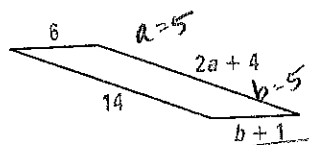
7. Regular hexagon

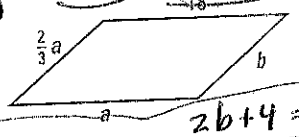
8. Regular 9-gon

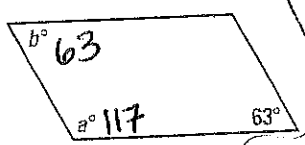
9. Regular 17-gon

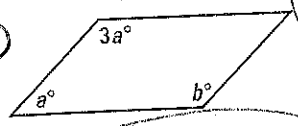
8.2 Find the value of each variable in the parallelogram.

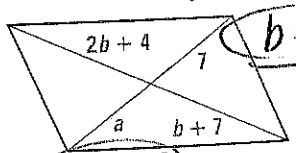
10. 

11. 

12. 

13. 

14. 

15. 

8.2 Use the diagram to copy and complete the statement.

16. $\angle WXV \cong$ ___

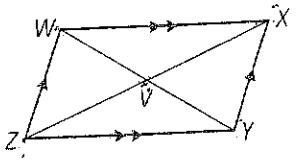
17. $\angle ZWV \cong$ ___

18. $\angle WVX \cong$ ___

19. $WV =$ ___

20. $WZ =$ ___

21. $2 \cdot ZV =$ ___



8.3 The vertices of quadrilateral $ABCD$ are given. Draw $ABCD$ in a coordinate plane and show that it is a parallelogram.

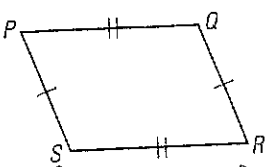
22. $A(5, 6), B(7, 3), C(5, -2), D(3, 1)$

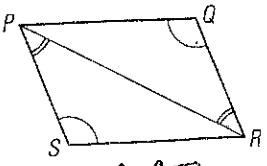
23. $A(-8, 2), B(-6, 3), C(-1, 2), D(-3, 1)$

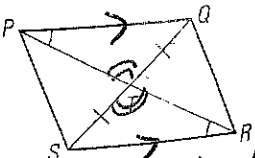
24. $A(-1, 11), B(2, 14), C(6, 11), D(3, 8)$

25. $A(-1, -5), B(4, -4), C(6, -9), D(1, -10)$

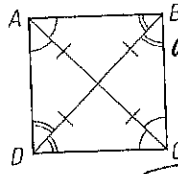
8.3 *Describe* how to prove that quadrilateral $PQRS$ is a parallelogram.

26. 

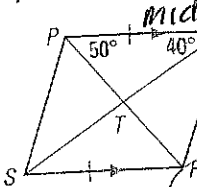
27. 

28. 

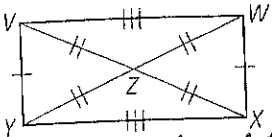
8.4 Classify the special quadrilateral. *Explain* your reasoning.

29. 

(Hexagram) diagonals bisect ≅ diagonals = (rectangle) ∡s bisected (rhombus)
Square

30. 

middle ∡s are ⊥ one pr sides ≅ ∥
rhombus

31. 

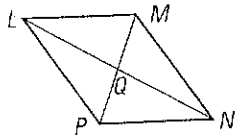
diagonals bisect ∡ ≅
rectangle

8.4 The diagonals of rhombus *LMNP* intersect at *Q*. Given that $LM = 5$ and $m\angle QLM = 30°$, find the indicated measure.

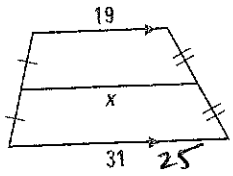
32. $m\angle LMQ$ 60

33. $m\angle LQM$ 90

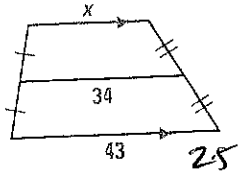
34. MN 5



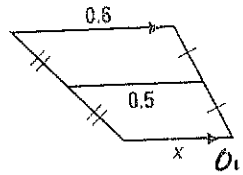
8.5 Find the value of x.

35. 

25

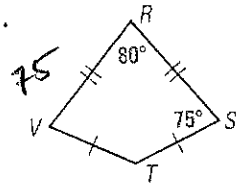
36. 

25

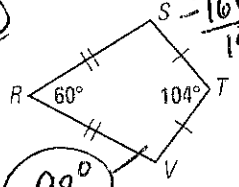
37. 

0.4

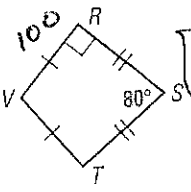
8.5 *RSTV* is a kite. Find $m\angle V$.

38. 

75

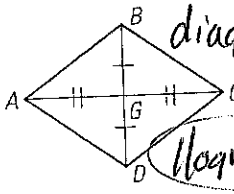
39. 

360 − 164 = 196 ÷ 2 = 98°

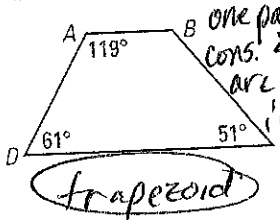
40. 

100

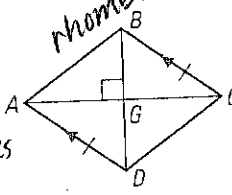
8.6 Give the most specific name for the quadrilateral. *Explain* your reasoning.

41. 

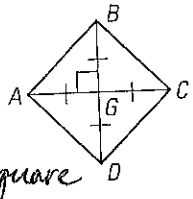
diagonals bisected
Hexagram

42. 

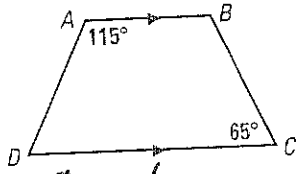
one pair of cons. ∡s are supp, ∴ one pr. of ∥ sides
trapezoid

43. 

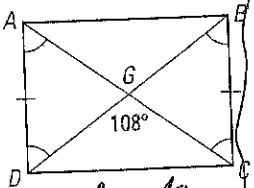
rhombus

44. 

Square

45. 

Isos. trap

46. 

rectangle

8.6 The vertices of quadrilateral *DEFG* are given. Give the most specific name for *DEFG*. *Justify* your answer.

47. $D(6, 8)$, $E(9, 12)$, $F(12, 8)$, $G(9, 6)$ kite

48. $D(1, 2)$, $E(4, 1)$, $F(3, -2)$, $G(0, -1)$ Square

49. $D(10, 3)$, $E(14, 4)$, $F(20, 2)$, $G(12, 0)$ trapezoid

50. $D(-2, 10)$, $E(1, 13)$, $F(5, 13)$, $G(-2, 6)$ Isos. trap

49. $m_{DE} = \frac{4-3}{14-10} = \frac{1}{4}$ (1 set ∥ lines)

$m_{FG} = \frac{0-2}{12-20} = \frac{2}{-8} = \frac{1}{4}$

$m_{EF} = \frac{2-4}{20-14} = \frac{-2}{6} = \frac{1}{3}$

$m_{DG} = \frac{0-3}{12-10} = \frac{-3}{2}$

$d_{EF} = \sqrt{(20-14)^2 + (2-4)^2} = \sqrt{36+4} = \sqrt{40}$

$d = \sqrt{(10-12)^2 + (3-0)^2} = \sqrt{4+9} = \sqrt{13}$

trapezoid

47. $d_{DE} = \sqrt{4^2+3^2} = \sqrt{25}$ $d_{EF} = \sqrt{3^2+4^2} = \sqrt{25}$ consecutive sides ≅

$d_{FG} = \sqrt{3^2+2^2} = \sqrt{13}$ $d_{DG} = \sqrt{3^2+2^2} = \sqrt{13}$

$m_{DF} = \frac{8-8}{12-6} = \frac{0}{6}$ diagonals are ⊥

$m_{EG} = \frac{6-12}{9-9} = \frac{-6}{0}$

Kate

EXTRA PRACTICE